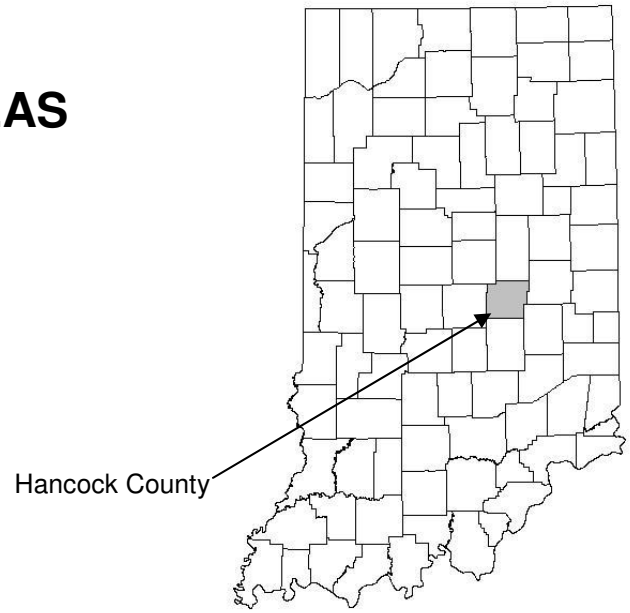
FLOOD INSURANCE STUDY

HANCOCK COUNTY, INDIANA

AND INCORPORATED AREAS

Community Name	*Community Number*
CUMBERLAND, TOWN OF	180510
FORTVILLE, TOWN OF	180372
GREENFIELD, CITY OF	180084
HANCOCK COUNTY (UNINCORPORATED AREAS)	180419
MCCORDSVILLE, TOWN OF	180468
NEW PALESTINE, TOWN OF	180336
*SHIRLEY, TOWN OF	180373
SPRING LAKE, TOWN OF	180346
*WILKINSON, TOWN OF	180103



*NO FLOOD HAZARD AREAS IDENTIFIED

Effective: December 4, 2007

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
18059CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

Old Zone(s)	New Zone
Al through A30	AE
B	X
C	X

Initial Countywide FIS Effective Date: December 4, 2007

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EXHIBITS

FLOOD INSURANCE STUDY
HANCOCK COUNTY, INDIANA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Hancock County, including the City of Greenfield; the Towns of Cumberland, Fortville, McCordsville, New Palestine, Shirley, Spring Lake, and Wilkinson; and the unincorporated areas of Hancock County (referred to collectively herein as Hancock County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that the Town of Shirley is geographically located in Hancock and Henry Counties.

Please note that the Towns of Shirley and Wilkinson are non-floodprone.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

The Digital Flood Insurance Rate Map (DFIRM) and FIS report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the Federal Emergency Management Agency (FEMA) DFIRM database specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Information on the authority and acknowledgements for each jurisdiction included in this countywide FIS report, as compiled from their previously printed FIS reports, are shown below:

Greenfield, City of:	The hydrologic and hydraulic analyses for the November 4, 1981, FIS report (FIA, 1981) were performed by the U.S. Geologic Survey (USGS), for the Federal Insurance Administration (FIA), under Interagency Agreement No. IAA-H-9-77, Project Order No. 11. The work was completed in June 1979. The floodway revision for Brandywine Creek for the February 4, 1987, revision (FEMA, 1987a) was performed by the Indiana Department of Natural Resources (IDNR), Division of Water, for FEMA.
Hancock County (Unincorporated Areas):	The hydrologic and hydraulic analyses for the April 15, 1982, FIS report (FEMA, 1982a) were performed by Snell Environmental Group, Inc., for FEMA, under Contract No. H-4777. The work was completed in December 1980.
Spring Lake, Town of:	The hydrologic and hydraulic analyses for the October 3, 1983, FIS report (FEMA, 1983) were obtained from the FIS report for the unincorporated areas of Hancock County.

For this countywide FIS, the hydrologic and hydraulic analyses for Bills Branch, Brandywine Creek, Briney Ditch, Dry Branch, Jackson Ditch, Jackson Arm Ditch, Little Brandywine Creek, North Fork, Rash Ditch, Stansbury Ditch, and West Fork Bills Branch were performed by Christopher B. Burke Engineering, Ltd. (CBBEL), under contract number EMC-2004-GR-0201, CTP-97.045. The work was completed in November 2005.

The hydrologic and hydraulic analyses for the streams studied by limited detailed methods were performed by PBS&J, for FEMA, under contract No. HSFE 05-04-D-0015 with FEMA. The work was completed in February 2006.

Base map information shown on the Flood Insurance Rate Map (FIRM) was provided in digital format by the State of Indiana, produced at a scale of 1:2,400, from aerial photography dated March 2005. The projection used in the

preparation of this map is State Plane Indiana East and the horizontal datum used is NAD 83, GRS80 spheroid.

1.3 Coordination

The initial and final meeting dates for the previous FIS reports for Hancock County and its communities are listed in the following table:

Community	FIS Date	Initial Meeting	Final Meeting
Greenfield, City of	November 4, 1981 February 4, 1987	November 1975 *	November 13, 1980 *
Hancock County (Unincorporated Areas)	April 15, 1982	April 1978	December 8, 1981
Spring Lake, Town of	October 3, 1983	*	January 10, 1983

* Data not available

For this countywide revision, a scoping meeting was held on July 15, 2004, and attended by representatives of Hancock County, the IDNR, FEMA, Watershed Concepts, CBBEL, and Michael Baker, Jr. The purpose of the meeting was to discuss the scope of the FIS.

The results of the study were reviewed at the final meeting held on October 15, 2006, and attended by representatives of FEMA, IDNR, PBSJ, and CBBEL. All problems raised at the meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Hancock County, Indiana, including the incorporated communities listed in Section 1.1. The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction through the time of the study.

Streams studied by detailed methods for this countywide revision are listed in Table 1. The limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

Table 1 - Streams Studied by Detailed Methods

Big Blue River	Dry Branch	Putter Ditch
Bills Branch	Jackson Ditch	Rash Ditch
Brandywine Creek	Jackson Arm Ditch	Six Mile Creek
Brier Creek	Little Brandywine Creek	Stansbury Ditch
Briney Ditch	Little Sugar Creek	Sugar Creek
Buck Creek	North Fork	West Fork Bills Branch
Doe Creek	Potts Ditch	

Brandywine Creek, Briney Ditch, and Little Brandywine Creek were restudied for this countywide revision. The newly studied streams for this revision included, Bills Branch, Dry Branch, Jackson Ditch, Jackson Arm Ditch, North Fork, Rash Ditch, Stansbury Ditch, and West Fork Bills Branch. Analyses for these streams were performed by CBBEL.

For this countywide revision, reaches of streams that have been studied by detailed methods were selected for redelineation based on more recent topography. The topographic data was provided by Hancock County and was mapped at 2 foot contour intervals (Hancock County, 2005). The State of Indiana also provided 2005 color aerial photographs (State of Indiana, 2005). The reaches that were redelineated in this revision are shown in Table 2.

Table 2 - Redelineated Streams

Stream	Reach Description
Big Blue River	From approximately 1,750 feet downstream of the downstream county boundary to County Road 900 West
Brier Creek	From the downstream county boundary to approximately 2,270 feet upstream of County Road 700 West
Buck Creek	From County Road 800 West to State Highway 234
Doe Creek	From County Road 800 West to the convergence of Dewald Ditch
Little Sugar Creek	From approximately 2,070 feet downstream of County Road 600 South to County Road 200 South

Table 2 - Redelineated Streams (*Continued*)

Stream	Reach Description
Potts Ditch	From the confluence with Brandywine Creek to East South Street and from West Fourth Street to County Road 200 North
Putter Ditch	From the confluence with Brandywine Creek to approximately 800 feet upstream of South State Street/State Highway 9
Six Mile Creek	From the confluence with Big Blue River to County Road 900 East
Sugar Creek	From County Road 600 South to State Highway 234

Also for this countywide revision, the areas studied by limited detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction. The reaches studied by limited detailed methods are listed in Table 3.

Table 3 - Streams Studied by Limited Detailed Methods

Stream	Reach Description
Anthony Ditch	From approximately 6,610 feet downstream of County Road 150 North (Eastbound) to approximately 4,380 feet upstream of County Road 400 North
Ashcraft Ditch	From the confluence with Thompson Ditch to approximately 1,300 feet upstream of County Road 300 South
Barrett Ditch	From State Highway 9 to approximately 1,610 feet upstream of County Road 600 North
Beeler Ditch	From the confluence with McFadden Ditch to approximately 4,660 feet upstream of County Road 1000 North

Table 3 - Streams Studied by Limited Detailed Methods (*Continued*)

Stream	Reach Description
Brier Arm Creek	From the confluence with Brier Creek to approximately 50 feet upstream of County Road 600 West
Cahill Shore Ditch	From approximately 960 feet downstream of County Road 600 North to approximately 6,080 feet upstream of Fortville Pike
Cherry Ditch	From the confluence with Brandywine Creek to approximately 2,500 feet upstream of County Road 700 North
Dewald Ditch	From the convergence with Doe Creek to the Conrail railroad crossing
Dilly Creek	From the confluence with Six Mile Creek to approximately 450 feet upstream of County Road 150 North
Keck Ditch	From approximately 175 feet upstream of the confluence with Brandywine Creek to approximately 2,690 feet upstream of State Highway 234
Kirkhoff Ditch	From the confluence with Sugar Creek to approximately 900 feet upstream of County Road 400 West
Kuhn Ditch	From the confluence with Keck Ditch to approximately 3,410 feet upstream of County Road 650 North (upstream crossing)
Leary Ditch	From the confluence with Sugar Creek to approximately 530 feet upstream of East Davis Road
Leary Webber Ditch	From the confluence with Sugar Creek to approximately 1,610 feet upstream of County Road 500 North

Table 3 - Streams Studied by Limited Detailed Methods (*Continued*)

Stream	Reach Description
Marsh Ditch	From the confluence with Sugar Creek to approximately 1,400 feet upstream of County Road 100 South
Marsh and Trees Ditch	From the confluence with Sugar Creek to approximately 3,960 feet upstream of County Road 600 East
Mary Webber Ditch	From approximately 440 feet upstream of the confluence with Little Sugar Creek to approximately 450 feet upstream of County Road 200 South
Maxwell Ditch	From the confluence with Little Sugar Creek to approximately 3,300 feet upstream of County Road 400 South
McFadden Ditch	From County Road 1100 North to approximately 5,300 feet upstream of the confluence of Beeler Ditch
Meralu Hack Ditch	From the confluence with Mud Creek to approximately 300 feet upstream of County Road 500 West
Mingle Ditch	From County Road 1100 North to approximately 4,900 feet upstream of County Road 1000 North
Morris Ditch	From the confluence with Anthony Ditch to approximately 2,520 feet upstream of South First Street
Mud Creek	From approximately 5,520 feet downstream of West Stinemyer Road to approximately 650 feet upstream of County Road 600 West
Nameless Creek	From the confluence with Big Blue River to approximately 2,750 feet upstream of County Road 250 North

Table 3 - Streams Studied by Limited Detailed Methods (*Continued*)

Stream	Reach Description
Ogle Ditch	From the confluence with Kirkhoff Ditch to approximately 1,940 feet upstream of County Road 200 North
Sweet Creek	From County Road 600 South to approximately 220 feet upstream of U.S. Highway 52
Thompson Creek	From the confluence with Little Sugar Creek to approximately 2,010 feet upstream of County Road 300 South
Tributary to Beeler Ditch	From the confluence with Beeler Ditch to approximately 430 feet upstream of State Highway 9
Tributary to Brandywine Creek	From approximately 250 feet upstream of the confluence with Brandywine Creek to approximately 4,500 feet upstream of County Road 850 East
Tributary 1 to Little Sugar Creek	From the confluence with Little Sugar Creek to approximately 2,270 feet upstream of County Road 300 South
Tributary 2 to Little Sugar Creek	From the confluence with Little Sugar Creek to approximately 410 feet upstream of County Road 50 West
Tributary 3 to Little Sugar Creek	From the confluence with Little Sugar Creek to approximately 420 feet upstream of South 50 West
Wales Ditch	From approximately 180 feet upstream of the confluence with Nameless Creek to approximately 140 feet upstream of County Road 350 North
West Parker Ditch	From the confluence with Sugar Creek to just upstream of County Road 300 North

Table 3 - Streams Studied by Limited Detailed Methods (*Continued*)

Stream	Reach Description
Wicker Road Ditch	From the confluence with Sugar Creek to approximately 300 feet upstream of County Road 50 East
Williamson Ditch	From approximately 4,350 feet downstream of State Highway 9 to approximately 3,550 feet upstream of Orphan Annie Drive
Willow Branch	From approximately 250 feet upstream of the confluence with Brandywine Creek to 3,550 feet upstream of State Highway 234

Approximate analyses were used to study those areas having low development potential or minimal flood hazards. The scope and methods of study were proposed to and agreed upon by FEMA and the IDNR.

The following tabulation presents Letters of Map Correction (LOMCs) incorporated into this countywide study:

LOMC	Case Number	Date Issued	Project Identifier
LOMR	99-05-083P	09/30/1999	Broadway Village (Second Submittal)
LOMR	97-05-4248P	09/10/1998	Putter Ditch, Whitcomb Commons
LOMA	03-05-4469A	09/12/2003	Deer Crossing, Section One, Lots 1 through 10

2.2 Community Description

Hancock County is located in central Indiana, approximately 10 miles east of Indianapolis. The county is bordered by Hamilton and Madison Counties to the north, Henry and Rush counties to the east, Shelby County to the south, and Marion County to the west. The total area contained within the county is 313.8 square miles. According to the U.S. Census Bureau, in 2000, the population for Hancock County was 55,391 (U.S. Census Bureau, 2006).

The climate in central Indiana is classified as continental. It is primarily influenced by eastward moving masses of cold polar air from the north and warm gulf air from the south. The average winter temperature is 34.5 degrees Fahrenheit (°F) and the average summer temperature is 85.9°F (U.S. Cities Online, 2006). The average annual rainfall for the county is 39.4 inches with slightly higher amounts occurring in the spring and earlier summer than in the remainder of the year (NOAA, 2006).

Hancock County is characterized by gently rolling to nearly flat topography, and primarily consists of agricultural land. Seventy-three percent of the soil in Hancock County is classified as the Crosby-Brookston soil association. These soils are characterized by poorly drained, level silt-loams and very poorly drained silt-clay loams on uplands. Seventeen percent of the soils are classified as the Miama-Crosby soil association, characterized by well drained soils occurring in rolling uplands and at breaks between the uplands and the bottomlands, paralleling the major streams. Ten percent of the soils are of the Ockley-Sloan-Shoals soil association, characterized by well drained, somewhat poorly drained, and very poorly drained soils found at nearly level bottomlands along streams (Purdue University and the U.S. Soil Conservation Service, 1971).

Stream flow in Hancock County is drained in a northeast-to-southwest direction. The major streams in the county are the Big Blue River and Sugar Creek with drainage areas of 269 and 96 square miles, respectively, at the southern county line.

The floodplains in Hancock County remain mostly undeveloped, except for the City of Greenfield, which is a highly developed community surrounded by rolling farmland, with a high potential for future growth. Within the floodplains of the City of Greenfield, development consists of private businesses, municipal buildings, and single-family residences.

2.3 Principal Flood Problems

The history of flooding of the streams within Hancock County indicates that flooding may occur during any season of the year. Historical flood peaks and their estimated recurrence intervals are presented in the following table for streams passing through Hancock County.

Stream Gage	Drainage Area (sq. mi)	Flood Date	Peak Discharge (cfs)	Estimated Recurrence Interval (Knipe and Rao, 2005)
03361000 Big Blue River at Carthage, IN (USGS, 2003)	184.00	March 4, 1963	12,900	0.2%-annual-chance-flood
		December 30, 1990	7,510	2-4%-annual-chance-flood
		November 19, 1994	8,410	4%-annual-chance-flood
03361500 Big Blue River at Shelbyville, IN (USGS, 2005a)	421.00	March 9, 1963	15,800	<4%-annual-chance-flood
		December 31, 1990	12,800	>2%-annual-chance-flood
		November 15, 1994	13,800	<4%-annual-chance-flood
		January 6, 2005	15,200	2-4%-annual-chance-flood
03362500 Sugar Creek near Edinburgh, IN (USGS, 2005b)	474.00	May 29, 1956	27,600	0.5-1%-annual-chance-flood
		March 5, 1963	17,300	2-4%-annual-chance-flood
		May 24, 1968	19,900	>4%-annual-chance-flood
		July 21, 1969	19,300	4%-annual-chance-flood
		December 31, 1990	17,100	2-4%-annual-chance-flood
		November 15, 1993	20,500	>4%-annual-chance-flood
		January 6, 2005	20,100	>4%-annual-chance-flood

In May 1956, approximately six inches of rain fell in Hancock County over a three day period. Residents were forced to evacuate their homes, levees and bridges failed, and highways were rendered impassable. A number of peak flow estimates were made for the 1956 flood by the USGS using the method of width contractions (Matthai, 1967). The 1956 flood peak discharge for Buck Creek at Cumberland was estimated to be 6,960 cubic feet per second (cfs), exceeding a 2-percent-annual-chance-flood. The estimated peak discharge for Little Sugar Creek at Pleasant View was estimated at 6,900 cfs, exceeding the 1-percent-annual-chance-flood.

2.4 Flood Protection Measures

No flood protection measures or structures exist in Hancock County at the time of the study.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance (100-year) flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

Pre-Countywide Analysis

For the Big Blue River, the discharges are based on a statistical analysis of discharge records maintained by the Indiana Department of Natural Resources (INDR) at the Shelbyville and Carthage gaging stations (Nos. 03361500 and

0336100) (IDNR, 1980). This analysis followed the standard log-Pearson Type III method as outlined by the Water Resources Council (WRC) (WRC, 1976).

Flood discharges for Brier Creek, Doe Creek, and Sugar Creek were obtained by a regional analysis of stream gages for similar watersheds in surrounding basins according to the Water Resources Council Bulletin No. 17 (WRC, 1976).

Flood discharges for Buck Creek were developed by the U.S. Army Corps of Engineers (USACE), Louisville District, using techniques described in Bulletin No. 17A (WRC, 1977) for neighboring Marion County. These discharges were extrapolated and used in Hancock County.

Flood discharges for Little Sugar Creek and Six Mile Creek were determined using the TR-20 computer program developed by the Soil Conservation Service (SCS) (SCS, 1965). The TR-20 program determines peak flows from rainfall data based on the basin characteristics such as drainage area, stream slope, soil cover, vegetation and land use characteristics.

A combination of methods was used to define discharge-frequency data for Potts Ditch and Putter Ditch. The methods used include: a regional relationship relating basin characteristics to streamflow characteristics (USGS, 1974); regional relationships of streamflow, drainage area, and percentage of urbanization (SCS, 1975); and regional relationships of peak discharge and drainage area for nearby gaging stations having similar hydrologic settings.

Some of the stream gages used include: Gage No. 03361650 on Sugar Creek at New Palestine; Gage No. 03351500 on Fall Creek near Forkville; Gage No. 03351400 on Sugar Creek near Middletown; and Gage No. 03361000 on Blue River at Carthage, with records available from October 1950 to the present (USGS, 1979).

Countywide Analysis

A hydrologic model was created, using the USACE's HEC-HMS Version 2.2.2 (HEC, 2003a), for Dry Branch, North Fork, and Stansbury Ditch using the Clark unit hydrograph method and 2-foot contour topographic data provided by Hancock County (Hancock, 2005). Watershed delineation was performed for Dry Branch, North Fork, and Stansbury Ditch using the HEC-GeoHMS (HEC, 2000) GIS toolset with ArcView 3.2 (ESRI, 1999).

Land use data was obtained from the USGS National Land Cover Dataset (USGS, 1993) and was updated to reflect recent residential and commercial developments based on the 2005 color aerial photography provided by the State of Indiana (State of Indiana, 2005).

Time of concentration calculations were performed manually using the SCS TR-55 methodology (SCS, 1986). The maximum length of the sheet flow component was 100 feet based upon current SCS guidelines. Transition of shallow concentrated flow to channel flow was defined by field observations, the engineer's judgment, or at the inspection of the flow path and a "blue line" drainage element in the Hancock County topographic data.

Muskingum-Cunge (HEC, 1990) 8-point channel routing parameters were derived from representative cross-sections in the detailed HEC-RAS hydraulic models for Dry Branch, North Fork, and Stansbury Ditch.

The peak discharge-frequency relationships for Jackson Ditch, Jackson Arm Ditch, and Rash Ditch were obtained using equation for the Jackson Ditch coordinated discharge plot. Coordinated discharge plots were based on a combination of regression equations, rainfall run-off models, and a review of gage analysis on a particular stream (Knipe and Rao, 2005).

The coordinated discharge plots were also used to determine the peak discharge-frequency relationships for Brandywine Creek, Briney Ditch, and Little Brandywine Creek.

The peak discharge-frequency relationships for Bills Branch and West Fork Bills Branch were estimated using Glatfelter's regression equations (USGS, 1984). Regression parameters used in these equations include drainage area, slope, runoff coefficient, 2-year, 24 hour rainfall depth, annual precipitation, and amount of storage in the watershed (Knipe and Rao, 2005).

For the limited detailed analyses the peak discharges were estimated using the coordinated discharge plots and published FWHA/IN/JTRP-2005/1 regional regression equations (Knipe and Rao, 2005). For each flooding source the coordinated discharge plots were used to estimate the discharges at points where the drainage area size was within the applicable range. The remaining discharges where the drainage area size was outside the applicable range were estimated using the regression equations.

The drainage areas and channel slopes for the selected streams were estimated using the automated methods as part of the Terrain Processing module of ArcHydro (ESRI, 2004). A 30-meter digital elevation model (DEM), downloaded from the USGS National Elevation Dataset (NED) (USGS, 2005) was used as the terrain source.

Peak discharge-drainage area relationships for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods of each flooding source studied in detail in the community are shown in Table 4.

Table 4 - Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
BIG BLUE RIVER					
At County Road 600 South	269.00	10,000	14,000	16,000	18,300
Just upstream of confluence of Nameless Creek	243.00	9,500	13,200	15,000	17,300
Just upstream of confluence of Six Mile Creek	196.00	8,400	11,800	13,300	15,400
BILLS BRANCH					
At 96th Street	1.36	315	468	539	686
Approximately 200 feet upstream of 96th Street	0.76	271	409	471	611
Approximately 400 feet downstream of Pin Oak Drive	0.55	195	293	338	437
At Woody Creek Drive	0.21	66	98	113	145
At Olio Road	0.18	48	70	81	103
Approximately 250 feet downstream of Cardinal Drive	0.15	96	147	170	223
BRANDYWINE CREEK					
At Interstate Highway 74	91.08	3,375	7,025	9,325	13,200
At U.S. Highway 52	65.82	3,000	6,125	8,000	11,300
Just below confluence of Little Brandywine Creek	53.59	2,775	5,625	7,275	10,200
Just below confluence of Putter Ditch	38.60	2,260	4,400	5,600	7,825
Just below confluence of Potts Ditch	37.63	2,220	4,300	5,500	7,650
At County Road 200 North	31.45	1,980	3,750	4,775	6,625
At County Road 500 North	24.33	1,680	3,100	3,875	5,350
BRIER CREEK					
At County Line Road	5.20	1,400	1,950	2,200	2,750
At County Road 200 South	4.70	1,310	1,840	2,080	2,600
At County Road 700 West	4.20	1,250	1,750	1,970	2,480
BRINEY DITCH					
At confluence with Little Brandywine Creek	3.76	285	510	635	870
BUCK CREEK					
At County Line Road	22.90	4,550	6,650	7,650	10,500
Just downstream of confluence of Lead Creek	21.40	4,450	6,500	7,500	10,300
Just upstream of confluence of Snider Branch	19.40	4,300	6,200	7,100	9,900
Just upstream of confluence of Burris Ditch	17.50	4,100	5,900	6,800	9,400
At County Road 300 North	14.40	3,700	5,400	6,200	8,600
At Conrail	11.90	3,400	5,000	5,700	7,900
At County Road 500 North	8.70	2,950	4,350	5,000	6,900

Table 4 - Summary of Discharges (*Continued*)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
BUCK CREEK (CONTINUED)					
Just upstream of confluence of Jones Ditch	5.40	2,400	3,500	4,000	5,500
At County Road 700 North	3.20	1,900	2,800	3,200	4,300
At County Road 300 West	2.50	1,670	2,440	2,790	3,800
DOE CREEK					
At County Line Road	5.20	1,400	1,960	2,200	2,760
At U.S. Highway 52	4.40	1,280	1,770	1,980	2,500
At County Road 300 South	3.70	1,180	1,660	1,850	2,340
About 3,400 feet upstream of County Road 300 South	2.80	1,020	1,420	1,610	2,030
At County Road 600 West	2.40	940	1,320	1,490	1,890
DRY BRANCH					
At County Line Road	4.80	280	490	600	890
At confluence of Stansbury Ditch	4.10	230	400	480	710
Approximately 1,000 feet upstream of Olio Road	1.80	75	140	170	250
Approximately 1,040 feet upstream of U.S. Highway 36	1.30	50	90	110	170
Approximately 2,230 feet upstream of U.S. Highway 36	0.55	20	40	45	70
JACKSON ARM DITCH					
At confluence with Jackson Ditch	2.61	140	230	280	410
JACKSON DITCH					
Approximately 1,000 feet downstream of West Staat Street	7.48	410	670	800	1,200
LITTLE BRANDYWINE CREEK					
At confluence with Brandywine Creek	14.30	1,170	2,000	2,480	3,350
At U.S. Highway 40	5.41	440	770	950	1,290
Approximately 1,200 feet upstream of County Road 100 North	4.39	350	620	770	1,050
LITTLE SUGAR CREEK					
At confluence with Sugar Creek	31.80	4,700	6,900	8,150	11,000
Just upstream of confluence of Mulliner Ditch	30.00	4,600	6,600	7,800	10,500
Just upstream of confluence of Thompson Ditch	25.60	4,200	6,100	7,200	9,800
At U.S. Highway 52	18.10	3,350	4,900	5,800	7,800
Just upstream of confluence of Maxwell Ditch	12.50	2,650	3,850	4,600	6,200

Table 4 - Summary of Discharges (*Continued*)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
LITTLE SUGAR CREEK (CONTINUED)					
At County Road 300 South	7.00	1,840	2,700	3,150	4,350
At County Road 200 South	5.30	1,550	2,250	2,680	3,670
NORTH FORK					
At County Line Road	2.60	100	180	215	315
Approximately 1,000 feet downstream of County Road 500 West	1.60	60	100	120	180
At County Road 500 West	0.90	35	60	70	105
POTTS DITCH					
At confluence with Brandywine Creek	3.50	1,070	1,660	2,120	2,900
At Park Avenue	2.89	840	1,270	1,650	2,180
At County Road 100 North	2.21	550	850	1,080	1,500
At Interstate Highway 70	0.81	240	380	510	720
PUTTER DITCH					
At confluence with Brandywine Creek	0.75	510	720	850	1,100
RASH DITCH					
At confluence with Jackson Ditch	2.71	150	240	290	430
SIX MILE CREEK					
At confluence with Big Blue River	45.60	4,200	5,900	6,600	8,600
At County Road 800 North	44.00	4,100	5,800	6,500	8,400
Just downstream of County Road 900 North	41.10	3,950	5,550	6,250	8,100
Just upstream of confluence of Dilly Creek	32.80	3,500	5,000	5,600	7,200
STANSBURY DITCH					
At confluence with Dry Branch	2.10	140	230	280	420
Approximately 1,070 feet downstream of County Road 700 North	1.70	100	180	210	310
Approximately 500 feet upstream of County Road 700 North	0.90	60	100	120	170
SUGAR CREEK					
Just upstream of confluence of Little Sugar Creek	95.70	7,500	11,000	12,600	16,600
At County Road 450 West	93.90	7,400	10,800	12,300	16,200
At U.S. Highway 40	85.40	7,000	10,300	11,800	15,500
At County Road 200 North	75.80	6,500	9,600	11,000	14,200
At State Highway 13	67.10	6,000	8,800	10,100	13,300
At State Highway 234	50.00	5,100	7,500	8,600	11,300

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data Table in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS report in conjunction with the data shown on the FIRM.

Precountywide Analysis

For Putter Ditch and Potts Ditch in the City of Greenfield, stream mileposts for the study have been previously determined by the IDNR. These mileposts were later located in the field by the Study Contractor. All cross sections were located and numbered relative to the predetermined mileposts, and stream distances between cross sections were approximate. The below water sections were obtained by field measurements. All bridges, dams and culverts were field surveyed to obtain elevation data and structural geometry.

For the Big Blue River, Brier Creek, Buck Creek, Doe Creek, Little Sugar Creek, Six Mile Creek, and Sugar Creek, cross sections were obtained in 1979 by field survey and from aerial photographs at a scale of 1:7,920 (Mid-States, 1979). All bridges, dams and culverts were field measured to obtain elevation data and structural geometry.

Water surface elevations (WSELs) for Potts Ditch and Putter Ditch were computed through use of the USGS E-431 step-backwater computer program (USGS, 1976).

WSELs for Big Blue River, Brier Creek, Buck Creek, Doe Creek, Little Sugar Creek, Six Mile Creek, and Sugar Creek were computed through use of the USACE's HEC-2 step-backwater computer program (HEC, 1976).

The starting WSELs for Potts Ditch and Putter Ditch were determined by the slope-area method.

Starting WSELs for the Big Blue River, Little Sugar Creek, and Sugar Creek were obtained from the FIS for Shelby County (FEMA, 1982c).

For Brier Creek, Doe Creek, and Six Mile Creek, starting WSELs were derived using the slope-area method.

The starting WSELs for Buck Creek were based on known starting WSELs from neighboring Marion County.

Countywide Analysis

Cross sections for Briney Ditch, Jackson Ditch, Jackson Arm Ditch, Little Brandywine Creek, and Rash Ditch were obtained from the detailed 2-foot contour mapping supplied by Burgess and Niple (Burgess and Niple, 2005) and from field survey data.

New cross section geometry for Bills Branch, Brandywine Creek, Dry Branch, North Fork, Stansbury Ditch, and West Fork Bills Branch were derived from the detailed 2-foot contour topographic maps provided by Hancock County (Hancock County, 2002).

The hydraulic analysis was prepared using HEC-RAS Version 3.1.1 (HEC, 2003b) to compute the WSELs for Bills Branch, Brandywine Creek, Briney Ditch, Dry Branch, Jackson Ditch, Jackson Arm Ditch, Little Brandywine Creek, North Fork, Rash Ditch, and West Fork Bills Branch. For Stansbury Ditch, the hydraulic analysis was prepared using HEC-RAS Version 3.1.2 (HEC, 2004).

Starting WSELs for Bills Branch, Briney Ditch, Dry Branch, Jackson Ditch, Jackson Arm Ditch, Little Brandywine Creek, North Fork, Rash Ditch, Stansbury Ditch, and West Fork Bills Branch were calculated using the slope-area method.

A known starting WSEL was used for Brandywine Creek.

Channel roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observations of the streams and floodplain areas. Manning's "n" values chosen for each stream studied by detailed methods are presented in the following table.

The Manning's "n" values for all detailed studied streams are listed in the following table:

Stream	Channel "n"	Overbank "n"
Big Blue River	0.030-0.060	0.050-0.120
Bills Branch	0.040	0.070
Brandywine Creek	0.040	0.060-0.100
Brier Creek	0.030-0.080	0.030-0.100
Briney Ditch	0.030-0.050	0.050-0.080
Buck Creek	0.030-0.060	0.030-0.100
Doe Creek	0.030-0.080	0.030-0.100
Dry Branch	0.040-0.075	0.035-0.050
Jackson Ditch	0.040	0.050-0.100
Jackson Arm Ditch	0.040	0.050-0.100

Stream	Channel "n"	Overbank "n"
Little Brandywine Creek	0.035-0.04	0.050-0.100
Little Sugar Creek	0.030-0.080	0.030-0.100
North Fork	0.035-0.050	0.060-0.090
Potts Ditch	0.030-0.080	0.030-0.240
Putter Ditch	0.030-0.080	0.030-0.240
Rash Ditch	0.040-0.045	0.050-0.070
Six Mile Creek	0.030-0.070	0.040-0.075
Stansbury Ditch	0.050-0.060	0.070-0.100
Sugar Creek	0.030-0.060	0.030-0.100
West Fork Bills Branch	0.045	0.085

The profile baselines depicted on the FIRM represent the hydraulic modeling baselines that match the flood profiles on this FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the Special Flood Hazard Area.

For this countywide study, cross section geometry for streams listed in Table 3, "Streams Studied by Limited Detailed Methods", were prepared using topography from the county (Hancock County, 2005) without surveying bathymetric data. The 1-percent-annual-chance WSELs were computed using the USACE's HEC-RAS hydraulic model, version 3.1.2 (HEC, 2004). HEC-GeoRAS was used to delineate the 1-percent-annual-chance floodplain (HEC, 2006). Where bridge or culvert data were readily available, these data were reflected in the hydraulic model. Where structure data were not readily available, field measurements were made to approximate the geometry in the hydraulic models. Models do not include field surveys that determine the specifics of channel and floodplain geometry. A limited detailed study can be upgraded to a full detailed study at a later date by verifying stream channel and overbank geometry, bridge and culvert geometry, and by analyzing multiple recurrence intervals.

Flood profiles were drawn showing computed WSELs to an accuracy of 0.5 foot for floods of the selected recurrence intervals.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the FIRM (Exhibit 2).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD). With the finalization of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are being prepared using NAVD as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD. Structure and ground elevations in the community must, therefore, be referenced to NAVD. It is important to note that adjacent communities may be referenced to NGVD. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities. In this revision, an average vertical datum conversion of -0.4 foot was calculated and used to convert all elevations in Hancock County from NGVD to NAVD using the National Geodetic Survey's (NGS) VERTCON online utility (NGS, 2005). The data points used to determine the conversion are listed in Table 5.

Table 5 - Vertical Datum Conversion

Quad Name	Corner	Latitude	Longitude	Conversion from NGVD to NAVD
McCordsville	SW	39.87	-86.00	-0.443 feet
McCordsville	SE	39.87	-85.87	-0.413 feet
Ingalls	SE	39.87	-85.75	-0.407 feet
Pendleton	SE	39.87	-85.62	-0.404 feet
Cleveland	SE	39.75	-85.62	-0.410 feet
Greenfield	SE	39.75	-85.75	-0.387 feet
Cumberland	SE	39.75	-85.87	-0.374 feet
Cumberland	SW	39.75	-86.00	-0.367 feet
			Average	-0.401 feet

For more information on NAVD, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (FEMA, 1992), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Silver Spring, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in

the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance (100-year) flood elevations and delineations of the 1- and 0.2-percent-annual-chance (500-year) floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data Table, and Summary of Stillwater Elevations Table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section.

For Brandywine Creek and Dry Branch, between cross sections the boundaries were interpolated using topographic maps at a scale of 1:3,600 with a contour interval of 2 feet (Hancock County, 2002).

For Bills Branch, Briney Ditch, Little Brandywine Creek, North Fork, Stansbury Ditch, and West Fork Bills Branch, between cross sections the boundaries were interpolated using topographic maps at a scale of 1:2,400 with a contour interval of 2 feet (Hancock County, 2002).

Between cross sections on Jackson Ditch, Jackson Arm Ditch, and Rash Ditch boundaries were interpolated using topographic maps at a scale of 1:4,800 with a contour interval of 2 feet (Hancock County, 2002).

The floodplain boundaries for the following streams were redelineated using digital topographic data with a contour interval of 2 feet (Hancock, 2002): Big Blue River, Brier Creek, Buck Creek, Doe Creek, Little Sugar Creek, Potts Ditch, Putter Ditch, Six Mile Creek and Sugar Creek.

For those streams listed in Table 3, Streams Studied by Limited Detailed Methods, boundaries were interpolated using digital topographic data with a contour interval of 2 feet (Hancock County, 2002).

For the streams studied by approximate methods, the boundary of the 1-percent-annual-chance flood was developed from normal depth calculations and topographic maps with a scale of 1:4,800 and a contour interval of 2 feet (Mid-States Engineering, 1979-1980) and topographic maps with a scale of 1:2,400 and a contour interval of 2 feet (IDNR, 1974). For Sugar Creek, the approximate flood boundaries were transferred from a map of flood prone areas prepared by the USGS (USGS, 1970). These boundaries were estimated from profiles based on high water marks and regional stage-frequency relations. Approximate areas were taken from the Flood Hazard Boundary Map for the unincorporated areas of Hancock County (FIA, 1977).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 foot, provided that hazardous velocities are not produced.

The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height. As a result, floodways for this study are delineated based on a flood surcharge of less than 0.15 feet. The floodways in this study were approved by the IDNR, and are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS report and on the FIRM were computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 6). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the WSEL of the 1-percent-annual-chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

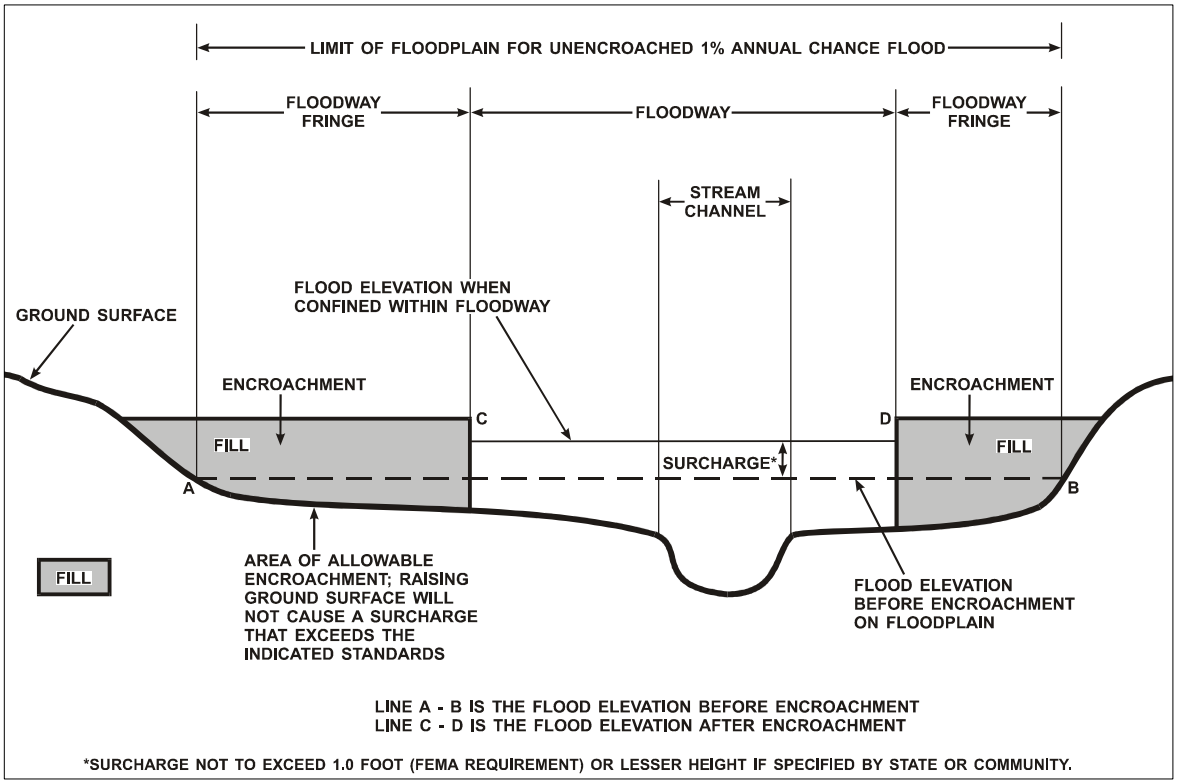

Figure 1 - Floodway Schematic

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BIG BLUE RIVER								
A	217,694	1,614	8,839	1.8	832.1	832.1	832.1	0.0
B	221,126	1,993	8,531	1.9	835.2	835.2	835.2	0.0
C	222,763	2,572	8,696	1.8	836.1	836.1	836.1	0.0
D	224,400	3,114	12,069	1.3	837.1	837.1	837.1	0.0
E	225,773	3,052	7,161	2.2	837.9	837.9	837.9	0.0
F	229,416	2,056	5,042	3.0	840.6	840.6	840.6	0.0
G	230,578	1,820	6,622	2.3	841.6	841.6	841.6	0.0
H	233,112	1,158	4,957	3.0	843.4	843.4	843.4	0.0
I	236,227	1,238	7,100	1.9	846.0	846.0	846.0	0.0
J	238,181	1,356	7,016	1.9	847.8	847.8	847.8	0.0
K	239,184	1,451	6,344	2.1	848.7	848.7	848.7	0.0
L	240,874	1,150	5,309	2.5	849.7	849.7	849.7	0.0

[1]Feet above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BIG BLUE RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BILLS BRANCH								
A	309	134	134	3.7	791.9	791.9	791.9	0.0
B	1,319	168	210	1.6	798.6	798.6	798.6	0.0
C	2,156	77	75	4.5	804.5	804.5	804.5	0.0
D	2,802	62	97	3.5	809.9	809.9	809.9	0.0
E	3,434	15	19	5.9	814.2	814.2	814.2	0.0
F	4,123	170	659	0.2	829.6	829.6	829.6	0.0
G	4,799	68	86	1.3	829.7	829.7	829.7	0.0
H	5,284	117	270	0.4	835.5	835.5	835.5	0.0
I	5,754	40	47	2.5	835.6	835.6	835.6	0.0
J	6,379	9	19	4.3	838.3	838.3	838.3	0.0

[1]Feet above East 96th Street

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BILLS BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BRANDYWINE CREEK								
A	1,162	1,324	5,007	1.5	831.3	831.3	831.4	0.1
B	4,607	1,050	4,357	1.7	833.8	833.8	833.9	0.1
C	7,856	1,776	6,837	1.1	837.3	837.3	837.4	0.1
D	9,492	1,209	3,071	2.4	838.0	838.0	838.1	0.1
E	14,084	1,118	3,847	2.1	842.3	842.3	842.4	0.1
F	17,219	1,366	4,294	1.7	845.1	845.1	845.2	0.1
G	19,713	1,642	4,566	1.6	848.2	848.2	848.2	0.0
H	22,550	1,070	4,332	1.7	850.2	850.2	850.3	0.1
I	24,775	778	2,777	2.6	852.5	852.5	852.6	0.1
J	26,538	840	3,822	1.5	854.9	854.9	855.0	0.1
K	29,957	1,015	3,862	1.5	856.6	856.6	856.7	0.1
L	31,796	771	2,777	2.0	857.1	857.1	857.2	0.1
M	33,688	363	1,941	2.9	860.7	860.7	860.7	0.0
N	35,585	397	2,026	2.7	862.4	862.4	862.4	0.0
O	36,822	830	4,156	1.3	862.8	862.8	862.9	0.1
P	38,948	644	2,137	2.4	866.9	866.9	867.0	0.1
Q	39,823	755	5,441	0.9	868.3	868.3	868.3	0.0
R	44,152	563	3,583	1.3	869.1	869.1	869.2	0.1
S	45,556	499	3,220	1.5	870.5	870.5	870.6	0.1
T	50,003	1,020	4,733	1.4	871.7	871.7	871.8	0.1
U	53,120	737	4,044	1.8	872.9	872.9	873.0	0.1

[1]Feet above County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BRANDYWINE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BRANDYWINE CREEK (CONTINUED)								
V	56,123	310	1,474	3.0	875.7	875.7	875.8	0.1
W	57,731	290	1,286	3.4	877.1	877.1	877.2	0.1
X	59,056	730	4,722	0.9	880.6	880.6	880.6	0.0
Y	64,077	510	2,053	1.9	881.7	881.7	881.8	0.1
Z	65,471	480	1,953	2.0	882.7	882.7	882.8	0.1
AA	67,104	670	2,430	1.6	884.0	884.0	884.1	0.1
AB	68,628	225	1,408	2.8	886.9	886.9	887.0	0.1

[1]Feet above County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BRANDYWINE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BRIER CREEK								
A	501	331	972	2.3	827.5	827.5	827.5	0.0
B	1,151	305	1,112	2.0	828.0	828.0	828.0	0.0
C	2,016	169	402	5.5	829.1	829.1	829.1	0.0
D	2,616	381	988	2.2	830.6	830.6	830.6	0.0
E	3,536	183	365	6.0	831.6	831.6	831.6	0.0
F	4,296	340	1,039	2.1	833.7	833.7	833.7	0.0
G	6,423	428	983	2.2	837.2	837.2	837.2	0.0
H	7,163	289	546	4.0	838.5	838.5	838.5	0.0
I	8,483	404	1,034	2.0	841.5	841.5	841.5	0.0
J	9,093	172	479	4.3	841.9	841.9	841.9	0.0
K	11,274	630	2,015	1.0	845.1	845.1	845.1	0.0
L	12,908	535	1,028	1.9	845.6	845.6	845.6	0.0

[1]Feet above County Road 800 West

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BRIER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BRINEY DITCH								
A	565	46	119	5.4	860.3	860.3	860.3	0.0
B	1,326	277	563	1.1	861.8	861.8	861.9	0.1
C	2,452	176	216	2.9	863.1	863.1	863.2	0.1
D	3,981	150	341	1.9	866.5	866.5	866.5	0.0
E	5,580	235	481	1.3	869.6	869.6	869.7	0.1
F	6,694	171	289	2.2	871.3	871.3	871.4	0.1
G	7,884	165	323	2.0	873.6	873.6	873.7	0.1
H	9,094	171	332	1.9	875.7	875.7	875.8	0.1
I	9,994	65	160	4.0	877.5	877.5	877.6	0.1
J	11,382	113	180	2.8	880.8	880.8	880.9	0.1
K	12,389	100	231	2.2	883.2	883.2	883.3	0.1
L	13,751	110	214	2.4	886.0	886.0	886.1	0.1
M	14,797	140	300	1.7	888.1	888.1	888.2	0.1
N	15,997	96	235	2.2	889.7	889.7	889.8	0.1
O	16,746	73	182	1.4	890.4	890.4	890.5	0.1
P	17,560	34	80	3.3	891.6	891.6	891.7	0.1
Q	19,135	182	232	1.1	894.9	894.9	895.0	0.1

[1]Feet above confluence with Little Brandywine Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BRINEY DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BUCK CREEK								
A	1,842	530	4,548	1.7	833.9	833.9	833.9	0.0
B	3,327	655	6,143	1.2	834.7	834.7	834.7	0.0
C	4,857	865	6,292	1.2	834.8	834.8	834.8	0.0
D	6,087	782	4,381	1.7	834.9	834.9	834.9	0.0
E	8,157	652	3,736	2.0	835.2	835.2	835.2	0.0
F	9,407	808	3,772	2.0	835.5	835.5	835.5	0.0
G	14,827	686	3,229	2.2	840.1	840.1	840.1	0.0
H	16,617	795	3,112	2.3	840.9	840.9	840.9	0.0
I	18,537	602	2,438	2.9	842.0	842.0	842.0	0.0
J	19,877	646	2,540	2.8	842.7	842.7	842.7	0.0
K	22,391	800	3,124	2.2	844.5	844.5	844.5	0.0
L	24,208	644	2,655	2.6	845.2	845.2	845.2	0.0
M	26,682	662	3,424	2.0	847.8	847.8	847.8	0.0
N	27,592	716	3,562	1.9	848.0	848.0	848.0	0.0
O	30,502	1,190	5,650	1.1	848.9	848.9	848.9	0.0
P	32,297	778	2,596	2.4	849.2	849.2	849.2	0.0
Q	33,137	710	1,561	3.7	849.5	849.5	849.5	0.0
R	34,796	837	5,587	1.0	853.3	853.3	853.3	0.0
S	36,016	624	4,711	1.2	853.3	853.3	853.3	0.0

[1]Feet above County Road 800 West

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BUCK CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BUCK CREEK (CONTINUED)								
T	36,793	651	3,582	1.6	853.5	853.5	853.5	0.0
U	37,633	1,269	5,884	1.0	853.6	853.6	853.6	0.0
V	39,193	1,576	5,569	1.0	853.6	853.6	853.6	0.0
W	40,828	2,445	7,219	0.8	853.7	853.7	853.7	0.0
X	43,469	2,710	10,853	0.4	853.8	853.8	853.8	0.0
Y	44,959	2,094	6,915	0.7	853.8	853.8	853.8	0.0
Z	46,374	1,634	6,260	0.7	853.8	853.8	853.8	0.0
AA	47,607	1,349	5,312	0.9	853.9	853.9	853.9	0.0
AB	49,622	1,362	4,470	0.8	854.0	854.0	854.0	0.0
AC	51,312	1,098	3,509	1.1	854.1	854.1	854.1	0.0
AD	53,690	984	1,844	2.0	854.7	854.7	854.7	0.0
AE	55,931	999	2,180	1.3	856.3	856.3	856.3	0.0
AF	57,071	1,070	2,718	1.0	856.5	856.5	856.5	0.0
AG	58,491	891	2,316	1.2	856.7	856.7	856.7	0.0
AH	59,267	875	2,014	1.4	856.8	856.8	856.8	0.0

[1]Feet above County Road 800 West

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BUCK CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
DOE CREEK								
A	788	310	976	2.3	807.2	807.2	807.2	0.0
B	1,548	329	618	3.6	808.2	808.2	808.2	0.0
C	3,838	288	597	3.7	812.8	812.8	812.8	0.0
D	4,818	320	1,018	2.2	815.8	815.8	815.8	0.0
E	6,118	274	845	2.6	818.9	818.9	818.9	0.0
F	7,068	299	1,170	1.9	821.7	821.7	821.7	0.0
G	8,148	382	1,208	1.8	823.8	823.8	823.8	0.0
H	8,928	247	799	2.5	824.8	824.8	824.8	0.0
I	11,020	429	2,512	0.8	833.4	833.4	833.4	0.0
J	13,289	810	2,034	0.9	833.7	833.7	833.7	0.0
K	14,744	602	1,462	1.3	833.8	833.8	833.8	0.0
L	16,157	464	719	2.6	835.8	835.8	835.8	0.0
M	17,448	298	619	2.6	837.6	837.6	837.6	0.0
N	18,548	298	659	2.4	838.9	838.9	838.9	0.0
O	19,798	373	883	1.8	839.8	839.8	839.8	0.0
P	20,658	457	917	1.6	840.3	840.3	840.3	0.0
Q	23,232	560	976	1.5	842.9	842.9	842.9	0.0
R	24,392	273	465	3.2	843.9	843.9	843.9	0.0

[1]Feet above County Road 800 West

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

DOE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
DRY BRANCH								
A	14,247	167	468	1.5	831.8	831.8	831.8	0.0
B	14,626	106	201	3.1	832.7	832.7	832.8	0.1
C	15,138	194	299	2.1	834.8	834.8	834.9	0.1
D	15,700	124	343	1.6	835.8	835.8	835.9	0.1
E	16,773	45	196	2.6	837.7	837.7	837.8	0.1
F	17,916	61	231	2.4	840.1	840.1	840.2	0.1
G	18,414	50	128	3.6	841.4	841.4	841.5	0.1
H	19,263	98	230	1.2	843.0	843.0	843.1	0.1
I	19,600	35	90	2.1	843.2	843.2	843.3	0.1
J	20,108	33	89	2.4	844.3	844.3	844.4	0.1
K	20,906	30	114	1.7	846.0	846.0	846.0	0.0
L	21,920	24	80	1.7	846.9	846.9	847.0	0.1
M	22,784	25	84	1.7	847.9	847.9	847.9	0.0
N	24,534	22	74	1.6	851.0	851.0	851.0	0.0
O	25,348	18	46	1.0	852.0	852.0	852.1	0.1
P	26,150	18	41	1.1	852.8	852.8	852.9	0.1
Q	26,572	25	65	0.7	854.2	854.2	854.3	0.1
R	27,167	18	44	1.0	854.6	854.6	854.6	0.0
S	27,650	23	40	1.1	854.9	854.9	854.9	0.0
T	28,950	18	30	1.5	856.1	856.1	856.1	0.0
U	29,695	16	34	1.3	857.7	857.7	857.7	0.0

[1]Feet above confluence with Fall Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

DRY BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
JACKSON ARM DITCH								
A	728	25	94	3.0	856.2	853.6[2]	853.6	0.0
B	1,309	29	91	3.0	856.2	854.4[2]	854.4	0.0
C	2,176	31	134	2.2	856.2	856.1[2]	856.1	0.0
D	3,440	56	290	1.4	857.6	857.6	857.6	0.0
E	4,369	37	309	1.7	857.8	857.8	857.8	0.0
F	5,423	26	243	2.4	858.2	858.2	858.2	0.0
G	6,546	50	682	2.1	859.0	859.0	859.0	0.0
H	8,075	160	1,030	0.5	861.9	861.9	862.0	0.1
I	8,973	164	557	0.4	861.9	861.9	862.0	0.1
J	10,097	51	128	1.2	862.0	862.0	862.1	0.1
K	11,220	16	50	2.0	862.4	862.4	862.5	0.1
L	12,273	42	94	1.3	863.1	863.1	863.2	0.1
M	12,920	53	239	0.7	864.9	864.9	865.0	0.1
N	14,350	178	499	0.2	865.0	865.0	865.1	0.1

[1]Feet above confluence with Jackson Ditch

[2]Elevations without consideration of backwater effects from Jackson Ditch

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

JACKSON ARM DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
JACKSON DITCH								
A	2,110	58	194	4.1	845.1	845.1	845.1	0.0
B	2,976	40	160	5.0	847.7	847.7	847.7	0.0
C	3,451	40	170	4.7	850.0	850.0	850.0	0.0
D	4,005	125	610	1.3	852.4	852.4	852.4	0.0
E	5,788	94	766	1.0	854.8	854.8	854.9	0.1
F	7,710	44	264	1.7	854.9	854.9	855.0	0.1
G	8,620	193	433	1.0	855.1	855.1	855.2	0.1
H	12,827	34	144	9.0	856.4	856.4	856.5	0.1
I	15,737	200	560	0.2	857.1	857.1	857.2	0.1

[1]Feet above county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

JACKSON DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
LITTLE BRANDYWINE CREEK								
A	1,759	370	871	2.9	855.5	855.5	855.6	0.1
B	1,996	450	1,332	1.9	856.3	856.3	856.3	0.0
C	2,653	220	833	3.0	856.8	856.8	856.9	0.1
D	3,548	422	1,575	1.6	858.2	858.2	858.3	0.1
E	4,410	350	1,108	1.7	858.6	858.6	858.7	0.1
F	5,452	65	249	4.8	859.3	859.3	859.4	0.1
G	5,667	110	385	3.1	860.0	860.0	860.1	0.1
H	6,247	110	205	5.8	861.1	861.1	861.2	0.1
I	7,742	125	347	3.4	866.3	866.3	866.3	0.0
J	8,660	150	500	2.4	868.5	868.5	868.6	0.1
K	9,511	175	378	3.2	869.8	869.8	869.9	0.1
L	12,015	180	534	2.0	874.6	874.6	874.7	0.1
M	13,711	139	352	3.0	876.8	876.8	876.9	0.1
N	14,528	197	454	2.3	878.6	878.6	878.7	0.1
O	16,000	140	445	2.4	880.7	880.7	880.8	0.1
P	16,912	330	1,009	0.9	882.8	882.8	882.8	0.0
Q	17,962	191	459	2.1	883.2	883.2	883.3	0.1
R	19,212	154	448	2.1	885.0	885.0	885.1	0.1
S	20,453	165	487	2.0	886.5	886.5	886.6	0.1
T	21,721	99	229	4.2	888.8	888.8	888.9	0.1
U	22,988	191	447	2.1	891.2	891.2	891.3	0.1

[1]Feet above confluence with Brandywine Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE BRANDYWINE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
LITTLE BRANDYWINE CREEK (CONTINUED)								
V	23,886	326	638	1.2	891.8	891.8	891.9	0.1
W	24,457	130	345	2.2	892.4	892.4	892.5	0.1
X	25,263	29	117	6.6	893.7	893.7	893.7	0.0
Y	26,268	77	233	3.3	896.3	896.3	896.3	0.0
Z	27,381	111	254	3.0	897.5	897.5	897.5	0.0
AA	28,397	50	149	5.2	899.7	899.7	899.7	0.0
AB	28,651	266	525	1.1	900.8	900.8	900.8	0.0
AC	29,518	155	239	1.0	901.4	901.4	901.5	0.1
AD	30,670	100	186	1.3	903.1	903.1	903.1	0.0
AE	31,441	195	256	0.9	904.0	904.0	904.1	0.1
AF	33,511	26	93	1.5	905.8	905.8	905.8	0.0
AG	33,911	100	101	1.4	906.1	906.1	906.1	0.0
AH	35,076	230	152	0.9	906.4	906.4	906.4	0.0
AI	35,742	16	39	3.6	907.1	907.1	907.1	0.0
AJ	36,657	19	53	2.6	909.5	909.5	909.5	0.0
AK	36,905	22	72	1.9	910.5	910.5	910.6	0.1

[1]Feet above confluence with Brandywine Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE BRANDYWINE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
LITTLE SUGAR CREEK								
A	14,522	660	4,555	1.7	806.7	806.7	806.7	0.0
B	14,992	520	3,217	2.3	806.8	806.8	806.8	0.0
C	15,542	639	3,414	2.2	806.9	806.9	806.9	0.0
D	16,542	915	3,631	2.1	807.8	807.8	807.8	0.0
E	17,922	472	1,974	3.8	808.4	808.4	808.4	0.0
F	19,742	421	1,471	4.0	810.3	810.3	810.3	0.0
G	21,357	746	1,988	3.0	813.5	813.5	813.5	0.0
H	22,837	696	1,910	3.1	815.3	815.3	815.3	0.0
I	23,922	668	1,943	3.0	816.4	816.4	816.4	0.0
J	25,172	337	1,170	4.6	817.3	817.3	817.3	0.0
K	28,319	452	3,139	1.7	825.8	825.8	825.8	0.0
L	29,369	731	3,874	1.4	826.3	826.3	826.3	0.0
M	32,549	593	2,577	2.1	828.4	828.4	828.4	0.0
N	33,409	721	2,529	2.1	829.2	829.2	829.2	0.0
O	34,261	634	2,178	2.5	830.3	830.3	830.3	0.0
P	34,981	506	1,433	3.1	831.0	831.0	831.0	0.0
Q	36,211	786	2,671	1.7	832.9	832.9	832.9	0.0
R	38,051	781	1,724	2.6	833.6	833.6	833.6	0.0
S	39,755	469	1,207	3.7	836.0	836.0	836.0	0.0
T	41,075	519	1,632	2.8	837.3	837.3	837.3	0.0

[1]Feet above confluence with Sugar Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE SUGAR CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
LITTLE SUGAR CREEK (CONTINUED)								
U	43,035[1]	399	1,002	4.5	838.2	838.2	838.2	0.0
V	44,485[1]	663	2,140	2.1	839.7	839.7	839.7	0.0
W	46,380[1]	1,042	3,823	1.0	842.5	842.5	842.5	0.0
X	47,830[1]	1,010	3,025	1.3	842.7	842.7	842.7	0.0
Y	49,470[1]	825	1,670	2.3	843.2	843.2	843.2	0.0
Z	50,800[1]	422	929	4.1	845.1	845.1	845.1	0.0
NORTH FORK								
A	305[2]	22	35	6.9	820.7	820.7	820.7	0.0
B	843[2]	57	103	2.9	823.2	823.2	823.2	0.0
C	3,226[2]	59	111	3.0	831.9	831.9	831.9	0.0
D	4,411[2]	26	75	2.3	835.0	835.0	835.1	0.1
E	5,694[2]	14	46	3.8	838.9	838.9	839.0	0.1
F	6,558[2]	30	61	3.1	840.7	840.7	840.8	0.1
G	7,854[2]	19	65	2.6	843.5	843.5	843.6	0.1
H	9,229[2]	28	104	1.2	847.6	847.6	847.7	0.1
I	11,525[2]	28	64	2.3	849.0	849.0	849.1	0.1
J	15,252[2]	12	13	2.8	853.4	853.4	853.4	0.0

[1]Feet above confluence with Sugar Creek
[2]Feet above County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE SUGAR CREEK - NORTH FORK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
POTTS DITCH								
A	1,795	187	399	4.6	869.5	869.5	869.5	0.0
B	1,954	109	383	4.8	872.0	872.0	872.0	0.0
C	2,323	187	507	3.7	873.8	873.8	873.8	0.0
D	4,013	431	1,278	1.5	883.6	883.6	883.6	0.0
E	4,277	326	1,827	1.0	883.6	883.6	883.6	0.0
F	4,541	279	1,078	1.7	883.8	883.8	883.8	0.0
G	5,069	235	1,014	1.8	884.0	884.0	884.0	0.0
H	5,966	165	676	2.7	884.4	884.4	884.4	0.0
I	6,494	335	903	1.8	885.1	885.1	885.1	0.0
J	6,653	400	524	3.2	885.3	885.3	885.3	0.0
K	6,864	366	523	3.2	886.3	886.3	886.3	0.0
L	7,709	85	256	5.7	888.2	888.2	888.2	0.0
M	8,870	394	687	1.9	891.1	891.1	891.1	0.0
N	10,138	192	511	2.1	892.6	892.6	892.6	0.0
O	11,616	361	1,353	0.7	893.8	893.8	893.9	0.1
P	12,725	171	633	1.5	893.9	893.9	894.0	0.1
Q	13,728	121	616	1.2	894.3	894.3	894.4	0.1
R	14,731	65	312	2.3	895.3	895.3	895.4	0.1
S	15,629	91	565	1.3	900.3	900.3	900.3	0.0
T	17,054	53	212	3.4	901.8	901.8	901.8	0.0
U	18,480	453	502	1.5	903.2	903.2	903.2	0.0

[1]Feet above confluence with Brandywine Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

POTTS DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
PUTTER DITCH								
A	454	493	2,342	0.4	861.7	860.2[2]	860.2	0.0
B	718	153	518	1.6	861.3	861.3[2]	861.3	0.0
C	1,024	214	426	2.0	862.4	862.4	862.4	0.0
D	1,431	84	188	4.5	864.8	864.8	864.8	0.0
E	1,610	62	136	5.6	866.2	866.2	866.2	0.0
F	1,927	111	316	2.4	868.0	868.0	868.0	0.0
G	2,138	112	221	3.4	869.6	869.6	869.6	0.0
H	2,402	111	269	2.8	871.4	871.4	871.4	0.0
I	2,508	219	1,067	0.6	878.4	878.4	878.4	0.0
J	2,666	128	788	1.2	878.4	878.4	878.5	0.1
K	2,878	137	666	1.6	878.4	878.4	878.5	0.1
L	3,274	78	296	3.3	878.5	878.5	878.6	0.1

[1]Feet above confluence with Brandywine Creek

[2]Elevation computed without consideration of backwater effects from Brandywine Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

PUTTER DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
RASH DITCH								
A	577	39	95	3.1	854.3	852.3[2]	852.3	0.0
B	2,316	72	152	1.8	854.9	854.9	855.0	0.1
C	3,381	47	101	2.7	856.0	856.0	856.0	0.0
D	4,177	73	243	1.1	856.5	856.5	856.5	0.0
E	4,977	70	160	1.7	856.7	856.7	856.7	0.0
F	6,616	167	187	1.0	858.7	858.7	858.8	0.1
G	7,722	48	130	1.5	859.3	859.3	859.4	0.1
H	8,829	38	113	1.7	859.8	859.8	859.9	0.1
I	11,071	33	78	1.6	861.6	861.6	861.7	0.1
J	12,207	17	37	3.3	862.9	862.9	862.9	0.0

[1]Feet above confluence with Jackson Ditch

[2]Elevation without consideration of backwater effects from Jackson Ditch

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

RASH DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SIX MILE CREEK								
A	2,539[1]	787	2,964	2.2	846.8	846.8	846.8	0.0
B	5,359[1]	856	2,385	2.8	850.6	850.6	850.6	0.0
C	6,759[1]	1,479	4,223	1.6	852.3	852.3	852.3	0.0
D	17,328[1]	764	2,383	2.7	868.8	868.8	868.8	0.0
E	19,173[1]	883	2,296	2.8	871.0	871.0	871.0	0.0
F	23,043[1]	500	1,694	3.3	878.6	878.6	878.6	0.0
STANSBURY DITCH								
A	577[2]	28	86	3.2	842.9	842.9	843.0	0.1
B	1,347[2]	26	94	2.9	845.7	845.7	845.8	0.1
C	2,228[2]	41	191	1.4	849.0	849.0	849.1	0.1
D	2,986[2]	157	579	0.5	851.9	851.9	852.0	0.1
E	3,671[2]	68	287	0.8	852.4	852.4	852.5	0.1
F	4,775[2]	23	101	2.2	852.9	852.9	853.0	0.1
G	6,413[2]	30	131	1.7	856.8	856.8	856.9	0.1
H	6,945[2]	48	138	1.6	857.3	857.3	857.4	0.1
I	8,498[2]	16	65	1.8	858.3	858.3	858.4	0.1
J	10,278[2]	21	103	1.2	860.1	860.1	860.1	0.0
K	12,621[2]	35	89	1.4	861.3	861.3	861.4	0.1

[1]Feet above confluence with Big Blue River
[2]Feet above confluence with Dry Branch

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

SIX MILE CREEK - STANSBURY DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SUGAR CREEK								
A	190,450	967	5,768	2.2	794.8	794.8	794.8	0.0
B	191,875	1,454	6,875	1.8	795.1	795.1	795.1	0.0
C	192,720	875	3,964	3.2	795.3	795.3	795.3	0.0
D	194,251	534	2,547	4.9	796.5	796.5	796.5	0.0
E	195,677	419	3,150	4.0	798.0	798.0	798.0	0.0
F	196,469	698	3,286	3.8	798.8	798.8	798.8	0.0
G	197,736	426	2,922	4.3	801.2	801.2	801.2	0.0
H	198,422	685	4,940	2.5	801.8	801.8	801.8	0.0
I	200,534	712	6,464	1.9	805.1	805.1	805.1	0.0
J	203,227	565	4,459	2.8	806.4	806.4	806.4	0.0
K	205,075	749	7,044	1.7	806.8	806.8	806.8	0.0
L	206,765	819	7,081	1.7	807.0	807.0	807.0	0.0
M	208,349	1,035	5,886	2.1	807.1	807.1	807.1	0.0
N	209,246	477	2,769	4.4	808.0	808.0	808.0	0.0
O	210,461	492	4,368	2.8	812.3	812.3	812.3	0.0
P	211,939	542	4,887	2.5	813.3	813.3	813.3	0.0
Q	212,837	522	4,738	2.6	813.7	813.7	813.7	0.0
R	213,682	603	5,592	2.2	814.4	814.4	814.4	0.0
S	215,160	830	3,076	4.0	815.3	815.3	815.3	0.0
T	217,114	563	4,138	3.0	818.7	818.7	818.7	0.0
U	218,434	798	6,282	2.0	819.1	819.1	819.1	0.0

[1]Feet above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

SUGAR CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SUGAR CREEK (CONTINUED)								
V	220,651	763	4,880	2.5	819.4	819.4	819.4	0.0
W	222,077	740	5,119	2.4	819.8	819.8	819.8	0.0
X	224,189	758	3,466	3.5	821.3	821.3	821.3	0.0
Y	225,614	625	2,619	4.7	823.6	823.6	823.6	0.0
Z	227,251	596	5,615	2.1	826.8	826.8	826.8	0.0
AA	228,730	1,087	9,511	1.2	827.0	827.0	827.0	0.0
AB	231,158	760	5,375	2.2	827.6	827.6	827.6	0.0
AC	233,693	919	6,326	1.9	829.2	829.2	829.2	0.0
AD	234,590	1,295	8,326	1.4	829.6	829.6	829.6	0.0
AE	236,122	770	3,979	3.0	830.1	830.1	830.1	0.0
AF	237,125	606	3,391	3.5	831.2	831.2	831.2	0.0
AG	240,979	894	5,723	2.1	836.1	836.1	836.1	0.0
AH	242,194	819	4,835	2.4	837.6	837.6	837.6	0.0
AI	243,038	534	3,621	3.3	839.5	839.5	839.5	0.0
AJ	243,883	670	3,451	3.4	840.7	840.7	840.7	0.0
AK	245,467	812	5,296	2.1	842.4	842.4	842.4	0.0
AL	246,998	1,180	2,727	4.0	842.6	842.6	842.6	0.0
AM	250,853	782	3,902	2.8	844.2	844.2	844.2	0.0
AN	251,909	1,011	6,256	1.8	844.8	844.8	844.8	0.0

[1]Feet above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

SUGAR CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SUGAR CREEK (CONTINUED)								
AO	253,334	1,517	7,563	1.5	844.9	844.9	844.9	0.0
AP	255,182	892	2,981	3.7	845.3	845.3	845.3	0.0
AQ	256,450	699	3,137	3.5	847.1	847.1	847.1	0.0
AR	258,086	1,216	5,559	2.0	850.2	850.2	850.2	0.0
AS	259,934	1,065	3,488	3.2	850.8	850.8	850.8	0.0
AT	262,205	981	7,371	1.5	854.9	854.9	854.9	0.0
AU	263,208	1,005	5,576	2.0	855.3	855.3	855.3	0.0
AV	266,376	1,188	6,187	1.6	855.9	855.9	855.9	0.0
AW	267,802	1,463	5,000	2.0	856.1	856.1	856.1	0.0
AX	268,858	1,269	2,962	3.4	856.5	856.5	856.5	0.0
AY	272,078	745	3,073	3.3	859.9	859.9	859.9	0.0
AZ	274,032	339	2,435	4.1	861.3	861.3	861.3	0.0
BA	275,458	412	3,344	3.0	863.6	863.6	863.6	0.0
BB	277,042	467	3,368	3.0	864.9	864.9	864.9	0.0
BC	278,837	681	5,343	1.9	865.3	865.3	865.3	0.0
BD	280,157	511	4,354	2.3	865.6	865.6	865.6	0.0
BE	280,843	670	4,703	2.1	866.2	866.2	866.2	0.0
BF	281,688	1,056	7,164	1.4	866.7	866.7	866.7	0.0
BG	283,589	803	4,010	2.5	869.1	869.1	869.1	0.0
BH	285,278	1,130	6,942	1.5	869.8	869.8	869.8	0.0

[1]Feet above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

SUGAR CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SUGAR CREEK (CONTINUED)								
BI	286,387[1]	951	7,500	1.3	870.2	870.2	870.2	0.0
BJ	287,232[1]	780	10,456	1.0	870.5	870.5	870.5	0.0
WEST FORK BILLS BRANCH								
A	582[2]	13	39	4.4	799.4	799.4	799.4	0.0
B	1,188[2]	92	208	0.8	808.9	808.9	808.9	0.0
C	2,103[2]	38	43	3.9	815.6	815.6	815.6	0.0

[1]Feet above mouth
[2]Feet above confluence with Bills Branch

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

SUGAR CREEK - WEST FORK BILLS BRANCH

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide FIRM presents flooding information for the entire geographic area of Hancock County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide

FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable**.** Historical data relating to the maps prepared for each community are presented in Table 7.

7.0 OTHER STUDIES

Previous FIS reports have been prepared for Hamilton County, Indiana and Incorporated Areas (FEMA 2003), Henry County, Indiana and Incorporated Areas (FEMA 1987b), Rush County, Indiana (Unincorporated Areas) (FEMA 1982b), and Shelby County, Indiana (Unincorporated Areas) (FEMA 1982c).

This report either supersedes or is compatible with all previous studies on streams studied in this report and should be considered authoritative for purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE	FIRM EFFECTIVE DATE	FIRM REVISION DATE
Cumberland, Town of	December 4, 2007	None	December 4, 2007	None
Fortville, Town of	December 4, 2007	None	December 4, 2007	None
Greenfield, City of	November 23, 1973	September 24, 1976 February 3, 1978	November 4, 1981	December 4, 2007
Hancock County (Unincorporated Areas)	July 1, 1977	None	October 15, 1982	December 4, 2007
McCordsville, Town of	July 1, 1977**	None	October 15, 1982**	December 4, 2007
New Palestine, Town of	December 4, 2007	None	December 4, 2007	None
Shirley, Town of*	December 4, 2007	None	December 4, 2007	None
Spring Lake, Town of	February 1, 1974	May 28, 1976	April 3, 1984	December 4, 2007
Wilkinson, Town of*	December 4, 2007	None	December 4, 2007	None

*No Flood Hazard Areas Identified
**Dates correspond to Hancock County (Unincorporated Areas) FIRM

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

HANCOCK COUNTY, IN
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

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